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KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

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WEST, JEFFREY R	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/913,992
Filing Date: March 21, 2002
Appellant(s): PELZ ET AL.

Aaron Grunberger
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed September 11, 2009, appealing from the Office action mailed October 29, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is substantially correct.

The Examiner also asserts, that claims 22 and 26, as may best be understood, stand rejected under 35 U.S.C. 103(a) as being unpatentable over Gray in view of Buckley and Chou and further in view of U.S. Patent No. 4,866,713 to Worger et al.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,370,449	RAZAVI et al.	4-2002
6,512,968	DE BELLEFEUILLE et al.	1-2003
6,330,499	CHOU et al.	12-2001
5,465,207	BOATWRIGHT et al.	11-1995
5,964,813	ISHII et al.	10-1999
6,185,491	GRAY et al.	2-2001
6,246,935	BUCKLEY	6-2001
4,866,713	WORGER et al.	09-1989

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 11, 12, 14, and 16-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 11 and 19 are rejected as lacking enablement because they each require "performing an error diagnosis of software running on the other components" and "allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components."

The specification best describes these features in the following passages:

First on page 5, lines 13-15:

> In addition, service element 2 allows a service provider to carry out a remote diagnosis of the individual components, using communication means 4. This service provider can then test the individual components directly, using communication means 4 and service element 2.

This section, while mentioning a service provider carrying out remote diagnosis and testing, does not enable one having ordinary skill in the art to use both the remote testing and the remote diagnosis. Specifically, by not mentioning any steps to be carried out regarding the test, one having ordinary skill in the art would not understand, and therefore would not be able to perform, the manner for testing. Additionally, this section makes it unclear to one having ordinary skill in the art how

the remote diagnosis and testing differ and raises the issue as to whether or not the remote diagnosis and testing are indeed different from each other. The claims, however, by requiring "allowing a remote diagnosis...wherein the remote diagnosis includes testing", indicate that diagnosing and testing are different from each other. The specification then further elaborates the operation of the service provider on page 5, lines 17-23 by only discussing the remote diagnosis, thereby again raising the question as to what constitutes the testing operation and how the testing differs from the remote diagnosis, specifically:

> Service element 2 also contacts the service provider, using communication means 4, when service element 2 can no longer eliminate an error itself. If the component in question can also no longer be repaired using the remote diagnosis of the service provider, then the service provider contacts the user of the distributed system, using communication means 4, in order to request that he or she visit a repair shop. Display 7 and/or communication means 4 is used for this. As an alternative, the audio playback of the car radio, which includes DAB receiver 6, can be used.

The specification then discloses, on page 7, lines 10-19, performing a functional test, but refers to the testing as being performed by the local service element, and not by a remote means, thereby making it unclear to one having ordinary skill in the art whether this testing is considered to be the remote testing, specifically:

> A method known for this is the checksum method. CRC (cyclical redundancy check) sums are calculated using code segments of the software, and are compared. In this manner, an incorrect code can be identified, and, if the remaining software of the service element has the independent capability, then the software can be repaired, e.g. by loading new software parts, so-called patches. In the case of serious software errors of service element 2, an emergency operation of service element 2 can ensure the correction. A functional test of the bus communication can be carried out using predefined signals, which are transmitted on the bus, and to which a certain response from the connected components is expected, this response being known to service element 2. This

> ensures that an error message of a subsystem is not lost due to a bus interruption.

Finally, the specification, on page 7, line 28 to page 8, line 3 discusses testing with respect to the remote service provider, specifically:

> Service element 2 questions a service provider in certain time intervals, e.g. once a month, if new software versions are available for the individual components of the distributed system. If this is the case, the service element requests such a new software version, and then loads it using communication means 4. The new software version is tested for errors, using test vectors, and is then configured for the corresponding components. Such an upgrade is then the specific software, or also the manufacturer of the components. It can also be a service company, which takes over the distribution of the software and the maintenance tasks.

However, this section does not remedy the lack of enablement of the claimed limitations because is discusses the testing as testing the new software version for errors. The claimed limitations in question require “performing an error diagnosis of software running on the other components” and “allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components", and therefore it is unclear to one having ordinary skill in the art whether the discussed testing of the new software version for errors is with reference to the claimed “performing an error diagnosis of software running on the other components” or “remote…diagnosis of the other components”.

For these reasons, the Examiner asserts that one having ordinary skill in the art would not be enabled to make/use the claimed “performing an error diagnosis of software running on the other components” and “allowing a remote diagnosis of the

other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components" as required by 35 U.S.C. 112, first paragraph.

Claims 12, 14, 16-18 and 20-23 are rejected under 35 U.S.C. 112, first paragraph, because they incorporate the lack of enablement present in their respective parent claims.

Claim 26 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 26 is rejected as failing to comply with the written description requirement because, as amended/presented, it requires, "a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: automatically, and at predefined intervals, performing an error diagnosis of software running on the other components; for each of a first subset of errors diagnosed in the error diagnosis step, repair the error; and for each of a second subset of errors diagnosed in the error diagnosing step, contact a provider and allow the provider to responsively remotely repair the error."

The specification, however, on page 5, lines 13-23 recites:

> In addition, service element 2 allows a service provider to carry out a remote diagnosis of the individual components, using communication means 4. This

> service provider can then test the individual components directly, using communication means 4 and service element 2.
>
> Service element 2 also contacts the service provider, using communication means 4, when service element 2 can no longer eliminate an error itself. If the component in question can also no longer be repaired using the remote diagnosis of the service provider, then the service provider contacts the user of the distributed system, using communication means 4, in order to request that he or she visit a repair shop. Display 7 and/or communication means 4 is used for this. As an alternative, the audio playback of the car radio, which includes DAB receiver 6, can be used.

The Examiner asserts that this section does suggest that the service element (i.e. processing device disposed in the motor vehicle) can both repair errors and, if an error is obtained that cannot be repaired, contact a provider and allow the provider to responsively remotely repair the error by disclosing "[s]ervice element 2 also contacts the service provider, using communication means 4, when service element 2 can no longer eliminate an error itself".

This section, however, also explicitly indicates that the “service element 2 allows a service provider to carry out a remote diagnosis of the individual components, using communication means 4" and “[t]his service provider can then test the individual components directly, using communication means 4 and service element 2”. This section, therefore, indicates that it is the service provider that carries out a remote diagnosis and does not support a local error diagnosis by the on-vehicle processing device nor that the diagnosis is an error diagnosis of software, as required by claim 26.

With respect to error diagnosis of software, the specification indicates on page 7, line 6 to page 8, line 3:

In regular intervals, service element 2 checks the components, which are connected to bus 1, and to which service element 2 also belongs. Therefore, a self-diagnosis is also carried out. This self-diagnosis, which is performed by software, is carried out using a suitable method.

A method known for this is the checksum method. CRC (cyclical redundancy check) sums are calculated using code segments of the software, and are compared. In this manner, an incorrect code can be identified, and, if the remaining software of the service element has the independent capability, then the software can be repaired, e.g. by loading new software parts, so-called patches. In the case of serious software errors of service element 2, an emergency operation of service element 2 can ensure the correction. A functional test of the bus communication can be carried out using predefined signals, which are transmitted on the bus, and to which a certain response from the connected components is expected, this response being known to service element 2. This ensures that an error message of a subsystem is not lost due to a bus interruption.

If service element 2 detects an error, then service element 2 contacts a service provider using communication means 4, in order to load corrected software and consequently configure the specific components of the distributed system. But if there is a hardware error, then service element 2 initially sends a message to a service provider, who then contacts the user, so that the components in question are replaced or repaired. This error diagnosis is conducted in certain time intervals, e.g. once a day or every week or once a month.

Service element 2 questions a service provider in certain time intervals, e.g. once a month, if new soft-ware versions are available for the individual components of the distributed system. If this is the case, the service element requests such a new software version, and then loads it using communication means 4. The new software version is tested for errors, using test vectors, and is then configured for the corresponding components. Such an upgrade is then automatically carried out by the visitor alone. A service provider can be the manufacturer of the specific software, or also the manufacturer of the components. It can also be a service company, which takes over the distribution of the software and the maintenance tasks.

The Examiner asserts that this section, does support the claimed limitations of “a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: automatically, and at predefined intervals, performing an

error diagnosis of software running on the other components" by providing a service element that periodically performs a CRC.

With respect to error correction (i.e. repair), this section, however, indicates that "the software can be repaired, e.g. by loading new software parts, so-called patches" wherein such repair is disclosed as "[i]f service element 2 detects an error, then service element 2 contacts a service provider using communication means 4, in order to load corrected software and consequently configure the specific components of the distributed system" or "if there is a hardware error, then service element 2 initially sends a message to a service provider, who then contacts the user, so that the components in question are replaced or repaired." This section, therefore, indicates that if a first subset of errors is diagnosed, the service element contacts a service provider to repair the error and if a second subset of errors is diagnosed, the service provider is also contacted, but in this instance a user is further contacted so that the components in question can be replaced or repaired.

This does not support a limitation of "a processing device disposed in the motor vehicle and adapted to perform operations including the operations of…for each of a first subset of errors diagnosed in the error diagnosis step, repair the error; and for each of a second subset of errors diagnosed in the error diagnosing step, contact a provider and allow the provider to responsively remotely repair the error" because for the first subset of errors, it is still the service provider that is remotely contacted to upload corrected software to repair the error and, for the second subset of errors, a

user is contacted to manually repair the error locally rather than performing such repair by the provider remotely.

Additionally, this second subset of errors corresponds to a hardware error and, therefore, does not properly support determining a second subset of errors based on "performing an error diagnosis of software running on the other components".

For these reasons, the Examiner asserts that the specification does not adequately support “a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: automatically, and at predefined intervals, performing an error diagnosis of software running on the other components; for each of a first subset of errors diagnosed in the error diagnosis step, repair the error; and for each of a second subset of errors diagnosed in the error diagnosing step, contact a provider and allow the provider to responsively remotely repair the error” and, as such, claim 26 contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11, 12, 14, 17-20 and 23, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,370,449 to Razavi et al. in view of U.S. Patent No. 6,512,968 to de Bellefeuille et al.

This rejection is based on the claims as may best be understood, due to the outstanding 35 U.S.C. 112, first paragraph, rejections, specifically, due to the lack of enablement of “performing an error diagnosis of software running on the other components” and “allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components” in independent claims 11 and 19.

With respect to claim 11, Razavi discloses a service element that belongs to a distributed system in a motor vehicle as a component (column 6, lines 10-18), the distributed system further including other components that are independent of one another (column 3, lines 30-33) and interconnected by a bus (column 4, lines 40-47), the service element comprising a processing device disposed in the motor vehicle (column 8, lines 21-49) and adapted to perform operations including the operations of configuring the other components (column 7, lines 40-46, column 8, lines 21-29, and column 11, lines 14-20), maintaining the other components (column 13, lines 53-61 and column 15, lines 6-13), allowing a remote diagnosis of the other components of the distributed system to be carried out (column 15, lines 3-10), and performing an emergency function (column 1, lines 41-46 and column 7, lines 54-63).

With respect to claim 12, Razavi discloses that the processing device is further adapted to perform the operations of detecting a new component and for integrating the new component into the distributed system (column 9, lines 45-54) and operating a display device to represent information about a configuration (column 10, line 46 to column 11, line 12).

With respect to claim 14, Razavi discloses that at least one of the maintaining operation and the correcting operation includes communicating with a communication element for loading new software for the other components (column 13, lines 61-64).

With respect to claim 17, Razavi discloses that the processing device is further adapted to perform the operations operating a display to transfer information about the distributed system to a user of the distributed system (column 11, lines 14-20)

With respect to claim 19, Razavi discloses a distributed system, comprising components connected by a bus (column 4, lines 40-47) the components being independent of each other and being disposed in a motor vehicle (column 3, lines 30-33), one of the components being a service element (column 6, lines 10-18) that includes a processing device adapted to perform operations (column 8, lines 21-49), the operations including configuring the other components (column 7, lines 40-46, column 8, lines 21-29, and column 11, lines 14-20), maintaining the other components (column 13, lines 53-61 and column 15, lines 6-13) allowing remote diagnosis of the other components of the distributed system to be carried out

(column 15, lines 3-10), and performing an emergency function (column 1, lines 41-46 and column 7, lines 54-63).

With respect to claim 20, Razavi discloses that at least one of the other components includes a communication element (column 4, lines 54-60 and column 5, line 51).

With respect to claim 23, Razavi discloses that the bus includes one of an electrical wiring system, an optical wiring system, and a radio based system (column 3, lines 53-57).

As noted above, the invention of Razavi teaches many of the features of the claimed invention and while the invention of Razavi does teach uploading new software and performing maintenance and updates of existing software of the other components when necessary, Razavi does not explicitly describe the manner in performing maintenance, specifically by performing an error diagnosis to check the software in accordance with a predetermined value.

De Bellefeuille teaches a computerized automotive service system comprising means for maintaining installed software, as part of an installation/uninstallation feature (column 10, lines 11-13), including an arrangement for performing integrity testing and error diagnosis of software by checking the software in accordance with a predetermined value in order to carry out the corrective maintenance (column 11, lines 12-25).

It would have been obvious to one having ordinary skill in the art to modify the invention of Razavi to explicitly include performing an error diagnosis to check the

software in accordance with a predetermined value, as taught by de Bellefeuille, because the combination would have provided a corresponding method for performing the maintenance of Razavi as part of the software updates that would have improved the operation of Razavi by periodically checking the integrity of the software of the other components to prevent incorrect operation due to software errors (column 11, lines 12-25).

Claim 16, as may best be understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Razavi et al. in view de Bellefeuille and further in view of U.S. Patent No. 6,330,499 to Chou et al.

This rejection is based on the claims as may best be understood, due to the outstanding 35 U.S.C. 112, first paragraph, rejections, specifically, due to the lack of enablement of “performing an error diagnosis of software running on the other components” and “allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components” in independent claims 11 and 19.

As noted above, the invention of Razavi and de Bellefeuille teaches many of the features of the claimed invention and while the invention of Razavi and de Bellefeuille does teach a communication element for loading new software for the other components as well as performing an error diagnosis of the software, the combination does not explicitly include communicating with a communications element for, in the case of a serious functional error, contacting a service provider.

Chou teaches a system and method for vehicle diagnostics and health monitoring including an in-vehicle computing system (column 2, lines 55-63) connected to a plurality of elements on a bus (column 3, lines 33-37 and column 6, lines 55-56) and an arrangement for allowing a remote diagnosis of the system (column 3, lines 15-31) and a communications element for, in the case of a serious functional error, contacting a service provider (column 5, lines 16-24 and column 7, lines 4-26). Chou also teaches coupling the processor through a communicating transceiver for communicating over a radio channel to further devices such as a notebook computer (column 3, lines 47-53).

It would have been obvious to one having ordinary skill in the art to modify the invention of Razavi and de Bellefeuille to explicitly include communicating with a communications element for, in the case of a serious functional error, contacting a service provider, as taught by Chou, because, as suggested by Chou, the combination would have aided the user of the system by providing trouble-shooting, diagnosis, tracking, and recommendations, as well as prevented serious consequences (column 1, lines 18-30) and provided emergency responses to an emergency condition, such as the condition signaled by the emergency arrangement of Razavi and de Bellefeuille (column 7, lines 22-26).

Claim 21, as may best be understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Razavi et al. in view de Bellefeuille and further in view of U.S. Patent No. 5,465,207 to Boatwright et al.

This rejection is based on the claims as may best be understood, due to the outstanding 35 U.S.C. 112, first paragraph, rejections, specifically, due to the lack of enablement of “performing an error diagnosis of software running on the other components” and “allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components” in independent claims 11 and 19.

As noted above, the invention of Razavi and de Bellefeuille teaches many of the features of the claimed invention and while the invention of Razavi and de Bellefeuille does teach a communication element as a transceiver station (i.e. modem) (Razavi; column 11, lines 38-42), the combination does not explicitly indicate that the transceiver station communicates over a radio channel.

Boatwright teaches a vehicle data system including a plurality of system components connected to a bus (Figure 4) wherein one of the components is a communication element comprising a transceiver station (i.e. modem) communicating over a radio channel (column 6, lines 62-66).

It would have been obvious to one having ordinary skill in the art to modify the invention of Razavi and de Bellefeuille to explicitly indicate that the transceiver station communicate over a radio channel, as taught by Boatwright, because Boatwright suggests that the combination would have provided a communication protocol for the modem of Razavi and de Bellefeuille that is a common manner of communication for modems (column 6, lines 62-66).

Claim 22, as may best be understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Razavi et al. in view de Bellefeuille and further in view of U.S. Patent No. 5,964,813 to Ishii et al.

This rejection is based on the claims as may best be understood, due to the outstanding 35 U.S.C. 112, first paragraph, rejections, specifically, due to the lack of enablement of “performing an error diagnosis of software running on the other components” and “allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components” in independent claims 11 and 19.

As noted above, the invention of Razavi and de Bellefeuille teaches many of the features of the claimed invention and while the invention of Razavi and de Bellefeuille does teach performing an error diagnosis of the software any time that it is desired (de Bellefeuille; column 11, lines 20-25), the combination does not explicitly indicate that the error diagnosis is performed at a predefined time interval.

Ishii teaches a vehicle diagnostic data storing system comprising means for performing error diagnosis wherein the diagnosis is performed at a predetermined time interval (column 4, lines 48-61).

It would have been obvious to one having ordinary skill in the art to modify the invention of Razavi and de Bellefeuille to explicitly indicate that the error diagnosis is performed at a predefined time interval, as taught by Ishii, because, as suggested by Ishii, the combination would have improved the system of Razavi and de Bellefeuille by providing automatic and periodic error diagnosis to reduce the burden of the user

having to initiate the diagnosis while reducing the chance of system error through diagnostics occurring more often (column 4, lines 48-61).

Claim 26, as may best be understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Razavi et al. in view de Bellefeuille and Chou et al. and further in view of U.S. Patent No. 5,964,813 to Ishii et al.

This rejection is based on the claim as may best be understood, due to the outstanding 35 U.S.C. 112, first paragraph, rejection, specifically, due to the lack of written description regarding “a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: automatically, and at predefined intervals, performing an error diagnosis of software running on the other components; for each of a first subset of errors diagnosed in the error diagnosis step, repair the error; and for each of a second subset of errors diagnosed in the error diagnosing step, contact a provider and allow the provider to responsively remotely repair the error” in independent claim 26.

As noted above, the invention of Razavi, de Bellefeuille, and Chou teaches many of the features of the claimed invention and while the invention of Razavi, de Bellefeuille, and Chou does teach performing an error diagnosis of the software any time that it is desired (de Bellefeuille; column 11, lines 20-25), the combination does not explicitly indicate that the error diagnosis is performed at a predefined time interval.

Ishii teaches a vehicle diagnostic data storing system comprising means for performing error diagnosis wherein the diagnosis is performed at a predetermined time interval (column 4, lines 48-61).

It would have been obvious to one having ordinary skill in the art to modify the invention of Razavi, de Bellefeuille, and Chou to explicitly indicate that the error diagnosis is performed at a predefined time interval, as taught by Ishii, because, as suggested by Ishii, the combination would have improved the system of Razavi, de Bellefeuille, and Chou by providing automatic and periodic error diagnosis to reduce the burden of the user having to initiate the diagnosis while reducing the chance of system error through diagnostics occurring more often (column 4, lines 48-61).

Claims 11, 12, 14, 16-21, and 23, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,185,491 to Gray et al. in view of U.S. Patent No. 6,246,935 to Buckley and further in view of U.S. Patent No. 6,330,499 to Chou et al.

This rejection is based on the claims as may best be understood, due to the outstanding 35 U.S.C. 112, first paragraph, rejections, specifically, due to the lack of enablement of “performing an error diagnosis of software running on the other components” and “allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components” in claims 11 and 19.

With respect to claim 11, Gray discloses a service element that belongs to a distributed system in a motor vehicle as a component (column 3, lines 27-32), the distributed system further including other components that are independent of one another and interconnected by a bus (column 3, lines 27-32 and Figure 2), the service element comprising a processing device disposed in the motor vehicle and adapted to perform operations (column 3, line 66 to column 4, line 8) including the operations of configuring the other components (column 3, lines 36-52 and column 5, line 55 to column 6, line 1), upgrading/maintaining the other components (column 4, line 65 to column 5, line 8), and performing an emergency function (column 3, lines 52-54).

With respect to claim 12, Gray discloses that the processing device is further adapted to perform the operations of detecting a new component and for integrating the new component into the distributed system (column 6, lines 28-53) as well as operating a display device to represent information about a configuration (column 5, lines 60-64 and Figure 9).

With respect to claim 14, Gray discloses that at least one of the maintaining and the correcting operation includes communicating with a communication element for loading new software interfaces for the other components (column 4, line 65 to column 5, line 6 and column 6, lines 34-40 and 62-64).

With respect to claim 17, Gray discloses that the processing device is further adapted to perform the operations operating a display to transfer information about the distributed system to a user of the distributed system (column 5, lines 32-64).

With respect to claim 19, Gray discloses a distributed system, comprising a bus and components connected by the bus, the components being independent of each other and being disposed in a motor vehicle (column 3, lines 27-32 and Figure 2), one of the components being a service element (column 3, lines 27-32) that includes a processing device to perform operations (column 3, line 66 to column 4, line 8) the operations including configuring the other components (column 3, lines 36-52 and column 5, line 55 to column 6, line 1), upgrading/maintaining the other components (column 4, line 65 to column 5, line 8), and performing an emergency function (column 3, lines 52-54).

With respect to claim 20, Gray discloses that at least one of the other components includes a communication element (column 4, line 65 to column 5, line 6 and column 6, lines 34-40 and 62-64).

With respect to claim 23, Gray discloses that the bus includes one of an electrical wiring system, and optical wiring system, and a radio based system (column 2, lines 55-61, column 3, lines 27-32 and Figure 2).

As noted above, the invention of Gray teaches all of the features of the claimed invention except for including performing an error diagnosis of software running on the components, in accordance with a predetermined value, and, in case of an error, correcting the software.

Buckley teaches a vehicle instrument panel computer interface and display including a central control node that communicates to a plurality of other components (column 2, lines 57-62 and column 3, lines 29-51) and performs an

error diagnosis of software running on the plurality of components (column 8, lines 46-63). Buckley also teaches determining the occurrence of an error in the software using a cyclic redundancy check with a checksum value (column 7, lines 38-52 and column 9, lines 28-38) (see also FOLDOC Free On-Line Dictionary of Computing, “cyclic redundancy check”), memory check (column 9, lines 38-55) and newly downloaded software check (column 10, lines 27-33), and, upon the occurrence of an error, correcting the software to maintain correct operation (column 9, lines 36-37 and 41-42 and column 10, lines 27-33) through the updating/upgrading the components of the system (column 10, lines 27-43).

It would have been obvious to one having ordinary skill in the art to modify the invention of Gray to include performing an error diagnosis of software running on the components, in accordance with a predetermined value, and, in case of an error, correcting the software, as taught by Buckley, because the combination would have provided a further method for determining when new updates are required, such as the updates/upgrades disclosed by Gray, and, as suggested by Buckley, provided a method for determining whether the software of the devices are updated, complete, and correct thereby insuring correct operation of the distributed system (column 8, lines 46-65, column 9, lines 28-30 and column 10, lines 30-33).

As noted above, the invention of Gray and Buckley teaches many of the features of the claimed invention and while the invention of Gray and Buckley does teach including a communication element for loading new software interfaces for the plurality of components, the combination does not specify that the communication

element includes a transceiver station communicating over a radio channel or including an arrangement for allowing a remote diagnosis of the plurality of components of the distributed system and a communications element for, in the case of a serious functional error, contacting a service provider.

Chou teaches a system and method for vehicle diagnostics and health monitoring including an in-vehicle computing system (column 2, lines 55-63) connected to a plurality of elements on a bus (column 3, lines 33-37 and column 6, lines 55-56) and an arrangement for allowing a remote testing and diagnosis of the system (column 3, lines 15-31 and column 5, lines 1-15) and a communications element for, in the case of a serious functional error, contacting a service provider (column 5, lines 16-24 and column 7, lines 4-26). Chou also teaches coupling the processor through a communicating transceiver for communicating over a radio channel to further devices such as a notebook computer (column 3, lines 47-53).

It would have been obvious to one having ordinary skill in the art to modify the invention of Gray and Buckley to specify that the communication element includes a transceiver station communicating over a radio channel, as taught by Chou, because Chou suggests that RF communication is one of a plurality of common communication means for interfacing to a plurality of devices thereby providing the user with desired method to communicate with the other devices. It also would have been obvious to include an arrangement for allowing a remote diagnosis of the plurality of components of the distributed system and a communications element for, in the case of a serious functional error, contacting a service provider, as taught by

Chou, because the combination would have provided a method for adhering to space constraints of the system while still providing detailed monitoring and diagnostic functions to insure correct system operation and, as suggested by Chou, aided the user of the system by providing trouble-shooting, diagnosis, tracking, and recommendations, as well as prevented serious consequences (column 1, lines 18-30) and provided emergency responses to an emergency condition, such as the condition indicated by the emergency arrangement of Gray (column 7, lines 22-26).

Claims 22 and 26, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Gray in view of Buckley and Chou and further in view of U.S. Patent No. 4,866,713 to Worger et al.

This rejection is based on the claims as may best be understood, due to the outstanding 35 U.S.C. 112, first paragraph, rejections, specifically, due to the lack of enablement of "performing an error diagnosis of software running on the other components" and "allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components" in claims 11 and 19 and due to the lack of written description regarding "a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: automatically, and at predefined intervals, performing an error diagnosis of software running on the other components; for each of a first subset of errors diagnosed in the error diagnosis step, repair the error; and for each of a second subset of errors diagnosed in the

error diagnosing step, contact a provider and allow the provider to responsively remotely repair the error" in independent claim 26.

As noted above, the invention of Gray, Buckley and Chou teaches many of the features of the claimed invention including determining the occurrence of an error in the software using a cyclic redundancy check with a checksum value (Buckley; column 7, lines 38-52 and column 9, lines 28-38), however, the combination does not specify that this error diagnosis is performed at a predefined time interval.

Worger teaches an operational function checking method and device for microprocessors comprising performing a cyclic redundancy check at predefined time intervals (i.e. periodically) (column 4, lines 24-29).

It would have been obvious to one having ordinary skill in the art to modify the invention of Gray, Buckley and Chou to specify that the error diagnosis is performed at a predefined time interval, as taught by Worger, because the combination would have provided a method for determining proper operation periodically over operation of the device to insure accurate operation is being performed and, as suggested by Worger, the combination would have complied with operation of the system in carrying out the testing method (column 4, lines 24-29).

(10) Response to Argument

- With respect to the rejection of claims 11, 12, 14, and 16-23 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement, Appellant argues:

With regard to claims 11 and 19, the Examiner believes that the specification does not adequately describe "performing an error diagnosis of software running on the other components" and "allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components." Specifically, the Examiner objects to (1) "not mentioning any steps to be carried out regarding the test" and (2) that "it [is] unclear.., how the remote diagnosis and testing are indeed different from each other." The Examiner further states that "one having ordinary skill in the art would not be able to perform both remote testing and remote diagnosis without undue experimentation as one having ordinary skill in the art would consider testing and diagnosis to often cover the same thing and therefore would turn to the specification for clarification." Advisory Action of February 4, 2009.

Appellants respectfully assert that one of ordinary skill in the art would be able to implement the claimed subject matter without undue experimentation. Component diagnosis/testing is known in the art and dependent on the specific device being diagnosed/tested. The invention is not "performing an error diagnosis" in-and-of-itself, but rather the entire claimed subject matter. To that end, the "performing an error diagnosis" is in accordance with the specific implementation of the invention, but a diagnosis/testing itself for any particular implementation would be understood by one of ordinary skill in the art, without having to perform undue experimentation.

Specifically, with regard to the feature of "allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components." It is quite clear that "testing... other components" is part of (e.g., a subset of) "a remote diagnosis of the other components." This is consistent with the specification that recites "service element 2 allows a service provider to carry out **a remote diagnosis** of the individual components, using communication means 4. This service provider **can then test** the individual components directly, using communication means 4 and service element 2." Substitute Specification at page 5, lines 13-15 (emphasis added). Moreover, it is understood from the plain meaning of the terms that testing is a subset of carrying out remote diagnosis. To perform a diagnosis means to identify the nature or cause of a phenomenon. A step in performing such identification may include performing a test.

The present invention is to a novel arrangement of electrical components that allows for remote diagnosis/testing. The actual diagnosis routines and test routines are well known in the art, and selected based on context of specific implementation. This known feature does not render the inventive arrangement as lacking enablement, since a person of ordinary skill in the art would not require undue experimentation to select the appropriate diagnosis routines and tests for a specific implementation.

The Examiner asserts that claims 11 and 19 are not sufficiently enabled because they each require both "performing an error diagnosis of software running on the other components" and "allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components."

The specification best describes these features in the following passages:

First on page 5, lines 13-15:

> In addition, service element 2 allows a service provider to carry out a remote diagnosis of the individual components, using communication means 4. This service provider can then test the individual components directly, using communication means 4 and service element 2.

The specification then further elaborates the operation of the service provider on page 5, lines 17-23 by only discussing the remote diagnosis, thereby raising the question as to what constitutes the testing operation, specifically:

> Service element 2 also contacts the service provider, using communication means 4, when service element 2 can no longer eliminate an error itself. If the component in question can also no longer be repaired using the remote diagnosis of the service provider, then the service provider contacts the user of the distributed system, using communication means 4, in order to request that he or she visit a repair shop. Display 7 and/or communication means 4 is used for this. As an alternative, the audio playback of the car radio, which includes DAB receiver 6, can be used.

The specification then discloses, on page 7, lines 10-19, performing a functional test, but refers to the testing as being performed by the local service element, and not by a remote means, thereby making it unclear to one having ordinary skill in the art whether this testing is considered to be the remote testing, specifically:

> A method known for this is the checksum method. CRC (cyclical redundancy check) sums are calculated using code segments of the software, and are compared. In this manner, an incorrect code can be identified, and, if the remaining software of the service element has the independent capability, then the software can be repaired, e.g. by loading new software parts, so-called patches. In the case of serious software errors of service element 2, an emergency operation of service element 2 can ensure the correction. A functional test of the bus communication can be carried out using predefined signals, which are transmitted on the bus, and to which a certain response from the connected components is expected, this response being known to service element 2. This ensures that an error message of a subsystem is not lost due to a bus interruption.

Finally, the specification, on page 7, line 28 to page 8, line 3 discusses testing with respect to the remote service provider, specifically:

> Service element 2 questions a service provider in certain time intervals, e.g. once a month, if new software versions are available for the individual components of the distributed system. If this is the case, the service element requests such a new software version, and then loads it using communication means 4. The new software version is tested for errors, using test vectors, and is then configured for the corresponding components. Such an upgrade is then the specific software, or also the manufacturer of the components. It can also be a service company, which takes over the distribution of the software and the maintenance tasks.

However, this section does not remedy the lack of enablement of the claimed limitations because is discusses the testing as testing the new software version for errors. The claimed limitations in question require “performing an error diagnosis of software running on the other components” and “allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components", and therefore it is unclear to one having ordinary skill in the art whether the discussed testing of the new software version for errors is with reference to the claimed “performing an error

diagnosis of software running on the other components" or "remote…diagnosis of the other components".

Therefore, while Appellant argues that support can be found for the limitations in question by turning to "the specification that recites 'service element 2 allows a service provider to carry out **a remote diagnosis** of the individual components, using communication means 4. This service provider **can then test** the individual components directly, using communication means 4 and service element 2.' Substitute Specification at page 5, lines 13-15 (emphasis added)", the Examiner asserts that because the specification on page 5, lines 17-23 only discusses the remote diagnosis with respect to the service provider, the specification on page 7, lines 10-19, discusses testing with respect to a local, not remote, device, and page 7, line 28 to page 8, line 3 discusses testing a new software version for errors, that appears to be non-distinct from the claimed "processing device disposed in the motor vehicle and adapted to perform operations including the operations of:…performing an error diagnosis of software running on the other components", the specification does not sufficiently enable the invention as claimed in claim 11.

Additionally, the Examiner asserts that on page 3 of the Appeal Brief, Appellant presents a summary of independent claim 11, as required per 37 CFR 41.37(c)(1)(v):

> Claim 11 relates to a service element, e.g., element 2 of Fig. 1, that belongs to a distributed system (e.g., Fig. 1) as a component. See, e.g., Substitute Specification, page 4, lines 4-5. The distributed system further includes other components (e.g., Fig. 1, elements 3-7) that are independent of one another and

> interconnected by a bus (e.g., Fig. 1, element 1). See, e.g., id. at page 4, lines 5-7. The service element (Fig. 1, element 2) includes a processing device for configuring the other components; maintaining the other components; performing an error diagnosis of software running on the other components and correcting any errors; allowing a remote diagnosis of the other components of the distributed system to be carried out, including testing at least one of the other components; and performing an emergency function. See, e.g., Fig. 4; Substitute Specification, page 1, lines 22-25.

The Examiner asserts that in providing a concise explanation of the subject matter defined in independent claim 11, per 37 CFR 41.37(c)(1)(v), Appellant indicates that the features of "a processing device for configuring the other components; maintaining the other components; performing an error diagnosis of software running on the other components and correcting any errors; allowing a remote diagnosis of the other components of the distributed system to be carried out, including testing at least one of the other components; and performing an emergency function" are supported by Figure 4 and page 1, lines 22-25, which states:

> In contrast, the service element of the present invention and the distributed system of the present invention have the advantage that the service element is able to carry out configurations, upgrades, maintenance, and, if necessary, emergency functions on the components of the distributed system.

The Examiner asserts that this section, in addition to the sections cited by the Examiner, fail to sufficiently enable one having ordinary skill in the art to make and/or use the claimed limitations of both "performing an error diagnosis of software running on the other components" and "allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote

diagnosis includes testing at least one of the other components" as required by 35 U.S.C. 112, first paragraph.

- With respect to the rejection of claim under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, Appellant argues:

> Claims 26 further recites "*a processing device disposed in the motor vehicle and adapted to perform operations*." Support for these features may be found in the Substitute Specification, e.g., at page 3, lines 30 to 33, which states "the component either being provided with its own hardware, i.e. its own processor, or running on an already existing processor, in parallel with other software, if this processor allows another component to do this."
>
> Claim 26 further recites "*automatically, and at predefined intervals, performing an error diagnosis of software running on the other components*." Support for these features may be found in the Substitute Specification, e.g., at page 7, line 6, which states that "[i]n regular intervals, service element 2 checks the components." Also, at page 3, lines 25 to 28, the Substitute Specification states "the present invention provides for a service element being used, which automatically configures components, performs maintenance tasks, and, in particular, updates individual components with new software versions, and, if necessary, automatically executes an emergency function as well, without the user having to intervene."
>
> Claim 26 further recites "*for each of a first subset of errors diagnosed in the error diagnosis step, repair the error," and for each of a second subset of errors diagnosed in the error diagnosing step, contact a provider and allow the provider to responsively remotely repair the error.*" Support for these features may be found in the Substitute Specification, e.g., at page 5, lines 17 and 18, which states that "[s]ervice element 2 also contacts the service provider, using communication element 4, when service element 2 can no longer eliminate an error itself." Additionally, page 5, lines 13 to 15, states that "service element 2 allows a service provider to carry out a remote diagnosis of the individual components, using communication element 4. This service provider can then test the individual components directly, using communication element 4 and service element 2." Additionally, page 5, lines 19 and 20 (emphasis added), states that "if the component in question can also no longer **be repaired using the remote diagnosis** of the service provider, then the service provider contacts the user of the distributed system." The above provided sections of the specification clearly describe errors the component can repair/fix/eliminate by itself, and a second group of errors that cause a provider to be contacted for repair.

> It is clear that Appellants had possession of each element of claim 26 at the time of filing. Further, as each cited reference deals with the service element, remote provider, and the interrelationship of the two, it is clear from the cited portions of the specification that Appellants had possession of this very combination of features now found in claim 26.

The Examiner asserts that claim 26, as amended/presented, requires, "a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: automatically, and at predefined intervals, performing an error diagnosis of software running on the other components; for each of a first subset of errors diagnosed in the error diagnosis step, repair the error; and for each of a second subset of errors diagnosed in the error diagnosing step, contact a provider and allow the provider to responsively remotely repair the error."

Appellant argues that support for the features of "for each of a first subset of errors diagnosed in the error diagnosis step, repair the error; and for each of a second subset of errors diagnosed in the error diagnosing step, contact a provider and allow the provider to responsively remotely repair the error" may be found in the specification at page 5, lines 17 and 18, page 5, lines 13-15, and page 5, lines 19 and 20.

Page 5, lines 13-23 of the specification states:

> In addition, service element 2 allows a service provider to carry out a remote diagnosis of the individual components, using communication element 4. This service provider can then test the individual components directly, using communication element 4 and service element 2.
>
> Service element 2 also contacts the service provider, using communication element 4, when service element 2 can no longer eliminate an error itself. If the component in question can also no longer be repaired using the remote diagnosis of the service provider, then the service provider contacts the user of the distributed system, using communication element 4, in order to request that

> he or she visit a repair shop. Display 7 and/or communication element 4 is used for this. As an alternative, the audio playback of the car radio, which includes DAB receiver 6, can be used.

The Examiner asserts that this section does suggest that the service element (i.e. processing device disposed in the motor vehicle) can both repair errors and, if an error is obtained that cannot be repaired, contact a provider and allow the provider to responsively remotely repair the error by disclosing "[s]ervice element 2 also contacts the service provider, using communication means 4, when service element 2 can no longer eliminate an error itself".

This section, however, also explicitly indicates that the “service element 2 allows a service provider to carry out a remote diagnosis of the individual components, using communication means 4" and “[t]his service provider can then test the individual components directly, using communication means 4 and service element 2”. This section, therefore, indicates that it is the service provider that carries out a remote diagnosis and does not support 1) local error diagnosis by the on-vehicle processing device or 2) that the diagnosis is an error diagnosis of software, as required by claim 26.

With respect to error diagnosis of software, the specification indicates on page 7, line 6 to page 8, line 3:

> In regular intervals, service element 2 checks the components, which are connected to bus 1, and to which service element 2 also belongs. Therefore, a self-diagnosis is also carried out. This self-diagnosis, which is performed by software, is carried out using a suitable method.
>
> A method known for this is the checksum method. CRC (cyclical redundancy check) sums are calculated using code segments of the software, and are compared. In this manner, an incorrect code can be identified, and, if the

remaining software of the service element has the independent capability, then the software can be repaired, e.g. by loading new software parts, so-called patches. In the case of serious software errors of service element 2, an emergency operation of service element 2 can ensure the correction. A functional test of the bus communication can be carried out using predefined signals, which are transmitted on the bus, and to which a certain response from the connected components is expected, this response being known to service element 2. This ensures that an error message of a subsystem is not lost due to a bus interruption.

If service element 2 detects an error, then service element 2 contacts a service provider using communication means 4, in order to load corrected software and consequently configure the specific components of the distributed system. But if there is a hardware error, then service element 2 initially sends a message to a service provider, who then contacts the user, so that the components in question are replaced or repaired. This error diagnosis is conducted in certain time intervals, e.g. once a day or every week or once a month.

Service element 2 questions a service provider in certain time intervals, e.g. once a month, if new soft-ware versions are available for the individual components of the distributed system. If this is the case, the service element requests such a new software version, and then loads it using communication means 4. The new software version is tested for errors, using test vectors, and is then configured for the corresponding components. Such an upgrade is then automatically carried out by the visitor alone. A service provider can be the manufacturer of the specific software, or also the manufacturer of the components. It can also be a service company, which takes over the distribution of the software and the maintenance tasks.

The Examiner asserts that this section does support the claimed limitations of “a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: automatically, and at predefined intervals, performing an error diagnosis of software running on the other components” by providing a service element that periodically performs a CRC.

With respect to error correction (i.e. repair), this section, however, indicates that “the software can be repaired, e.g. by loading new software parts, so-called patches” wherein such repair is disclosed as “[i]f service element 2 detects an error, then

service element 2 contacts a service provider using communication means 4, in order to load corrected software and consequently configure the specific components of the distributed system" or "if there is a hardware error, then service element 2 initially sends a message to a service provider, who then contacts the user, so that the components in question are replaced or repaired." This section, therefore, indicates that if a first subset of errors is diagnosed, the service element contacts a service provider to repair the error and if a second subset of errors is diagnosed, the service provider is also contacted, but in this instance a user is further contacted so that the components in question can be replaced or repaired.

This does not support a limitation of "a processing device disposed in the motor vehicle and adapted to perform operations including the operations of…for each of a first subset of errors diagnosed in the error diagnosis step, repair the error; and for each of a second subset of errors diagnosed in the error diagnosing step, contact a provider and allow the provider to responsively remotely repair the error" because for the first subset of errors, it is still the service provider that is remotely contacted to upload corrected software to repair the error and, for the second subset of errors, a user is contacted to manually repair the error locally rather than performing such repair by the provider remotely.

Additionally, this second subset of errors corresponds to a hardware error and, therefore, does not properly support determining a second subset of errors based on "performing an error diagnosis of software running on the other components".

For these reasons, the Examiner asserts that the specification does not adequately support “a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: automatically, and at predefined intervals, performing an error diagnosis of software running on the other components; for each of a first subset of errors diagnosed in the error diagnosis step, repair the error; and for each of a second subset of errors diagnosed in the error diagnosing step, contact a provider and allow the provider to responsively remotely repair the error” and, as such, claim 26 contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

- With respect to claims 11, 12, 14, 17-20 and 23, as may best be understood, under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,370,449 to Razavi et al. in view of U.S. Patent No. 6,512,968 to de Bellefeuille et al., Appellant argues:

> Claims 11 and 19, as well as their dependent claims, should be allowed because neither Razavi nor de Bellefuille discloses the feature of "performing an emergency function." The Examiner refers to col. 1, lines 41-46 and col. 7, lines 54-63 of Razavi as assertedly disclosing this feature. However, col. 1, lines 41-46, the "background" section of Razavi that discusses traditional automobile design, states: "designers may also incorporate into the vehicle the delivery of services that may assist the driver, thereby reducing the driver's workload and anxiety level. Such services may include providing computerized maps, navigation aids and emergency assistance signaling." First, this does not disclose "**a processing device** disposed in the motor vehicle and adapted to **perform** operations including the operations of:.., performing an emergency function." Since this section discusses "traditional" automobile designs, and does

not further elaborate on "emergency function," the disclosure is likely referring to simple hazard signal lights, which does not require any processing device adapted to perform operations including performance of an emergency function. In any event, it does not identically disclose "**a processing device**.., to perform.., an emergency function." Second, even if one assumed that this did disclose "performing an emergency function," it does not form any part of any embodiment of Razavi. In this hypothetical case, it would actually teach away from the combination, because while Razavi discusses emergency assistance signaling in the background section, Razavi, nevertheless, omits any such feature from the embodiments of the Razavi disclosure.

The Examiner argues that this "refers to emergency assistance signaling as one particular delivery of services to the user which are described throughout the disclosure as network-based services (see, for example, column 5, lines 9-35) and are also described as being performed by a processing device, along with a map service, in column 7, lines 54-63." However, this characterization is simply incorrect. It may be true that col. 5, lines 9 to 35 and col. 7, lines 54-63 discuss network based services and services provided by a processor, but the services discussed in these sections have absolutely nothing to do with "performing an emergency function," and merely discloses text-to- speech and computerized maps. It seems that the Examiner is arguing that since the background section of Razavi discloses a prior art service of "emergency assistance signaling," and since embodiments of Razavi disclose computerized services such as text- to-speech, that Razavi discloses a "processing device.., to perform.., an emergency function." This assertion is not logically sustainable. Razavi may disclose prior art "emergency assistance signaling," and further disclose other computerized services, but this simply does not disclose the feature of a "processing device.., to perform.., an emergency function."

The Examiner asserts that Appellant’s arguments are not considered to be persuasive for the following reasons:

The Examiner first asserts that Razavi discloses an easily-upgradeable vehicle component architecture comprising a processing device operable to interact with, and control, processor-controlled components that provide services:

This mechanism may also be used to personalize the operation of the automobile, adjusting seat positions, radio stations and the like according to the preferences of different drivers. The extent to which this mechanism controls the

> various functions of the automobile depends, of course, upon the coupling of the related automobile components to the in-car sub-network. (column 7, lines 40-46)
>
> As indicated above, compute platform 22 is at the center of in-car sub-network 20. In one embodiment, compute platform 22 is a Java platform. (Java is a trademark of Sun Microsystems, Inc.) In other words, compute platform 22 uses the Java programming language to provide an environment in which Java applications can be executed. The use of a Java environment in compute platform 22 allows the software that will be executed on the compute platform to be hardware independent. (column 8, lines 21-29)
>
> In other embodiments, similar software applications and monitors can be used to generate graphics for other equipment such as console displays, radio controls, air conditioning controls and the like. Other embodiments may also utilize independent processors and memories to generate graphics for the monitors rather than having the graphics generated by an application executing on the server. (column 11, lines 14-20)

The Examiner then asserts that Razavi explicitly discloses the well-known prior art services of "computerized maps, navigation aids and emergency assistance signaling", specifically:

> The designers may also incorporate into the vehicle the delivery of services that may assist the driver, thereby reducing the driver's workload and anxiety level. Such services may include providing computerized maps, navigation aids and emergency assistance signaling. (column 1, lines 41-46)

The Examiner also asserts that Razavi explicitly discloses that the entire purpose Razavi is to improve upon the prior art system by providing services to a user as part of the easily-upgradeable vehicle component architecture:

> While it may be desirable to upgrade the components of automobiles, they are often difficult, if not impossible, to upgrade. The components typically have unique physical and functional characteristics, including their size, shape and interface to the automobile, which prevent them from being replaced with similar, but not identical parts. Further, the replacement of the components can be very

labor-intensive, and it is not unusual for the cost of the labor to install the components to be on the same order as the cost of the components themselves. **There is therefore no practical way in the prior art for an automobile which is already in production to be upgraded to maintain state-of-the-art components and/or functionality.** (emphasis added- column 1, line 61 to column 2, line 6)

IP (Internet Protocol) is a protocol which is typically used in conjunction with TCP (Transport Control Protocol) as a protocol suite for passing data from applications to networks and then from the networks to other applications. The IP portion of the protocol suite is used in transporting packets from the transmitting device to the receiving device. IP addresses are, of course, the means by which the packets are directed to the target device. Because IP addresses are well-known in the data-processing arts, they will not be explained in further detail here. It is sufficient to note that IP addressing allows data to be directed to devices which are not part of a predetermined, hard-wired design. "Object terminology," as used in this disclosure, refers to software language which handles devices in an object-oriented manner. That is, the devices and their functions can be used in a manner which is not dependent upon the specific implementation of the device, but instead upon the type and functions of the device. For instance, as will be explained below in regard to Jini software, a device which joins a network may register its services with a lookup server so that other devices which need these services can request them without regard to the specific device that provides them. **In contrast, prior art on-board diagnostic buses have specific, predetermined devices which provide specific, predetermined services and which transmit/receive data over a specific, predetermined path.** By using IP addressing and object terminology to provide communication between devices on the network, the invention eliminates the constraints which are inherent in bus systems. (Communication, as used here, includes data transfer and any other interaction between the devices.) (emphasis added- column 3, line 61 to column 4, line 24)

The goals of the system can be grouped into three broad categories: hardware independence; service delivery; and software upgradability. The hardware independence of the system is related to the interchangeability of the components of the automobile's sub-network. If, for example, the sub-network includes a graphical display, this display should be replaceable with several different displays, each having unique characteristics. The several displays only need to be able to interface with the sub-network in order to be exchanged. The goal of service delivery relates to the ability to provide new and different services to the vehicle through the sub-network. **Although automobiles in the prior art may provide one or two services to the driver, e.g. driver assistance via automatic telephone communications, the equipment for providing these services are dedicated to their respective services and cannot provide**

> **distinctly different services. The present system, on the other hand, allows new components or new software to be added to the automobile sub-network and thereby enables new services to be provided to the driver.** Finally, software upgradeability relates to the ease with which software systems in the automobile may be upgraded via the automobile sub-network. Rather than manually replacing memory modules or CDs (e.g. containing map data,) the automobile sub-network enables the downloading of new applications or data, as well as the uploading of vehicle diagnostic data or other information, through the network communication devices. (emphasis added - column 5, lines 9-35)
>
> As indicated above, the configuration of the vehicle components as network devices on an in-car sub-network simplifies installation and removal of the devices, hence re-configuration of the vehicle. This system thereby makes it possible to remove outdated components and replace them with new components, even though the new components may have different features or require different data or other signals from the vehicle or its components. Similarly, components which execute associated software, display data or provide services can be upgraded by downloading new software, data or services ("upgrade data") to the components through the in-car sub-network. This software may be quickly and easily retrieved from sources external to the in-car sub-network, such as web pages or LANs which can be accessed through the communication devices on the in-car sub-network. The software can be retrieved by one device (e.g., a wireless modem,) conveyed through the network and installed in a second device (e.g., a GPS locator) as easily as downloading a web page. The system thereby provides a great deal of flexibility in the hardware and software configurations of the vehicle. **In contrast, prior art systems for providing in-car services are tightly coupled to the car manufacturer's choice of hardware and operating system. Changes to the hardware require substantial time, labor and expense. Changes to the software require the original software supplier to provide modified code.** The use of Personal Java in the in-car sub-network provides platform independence and also eliminates a substantial portion of the labor, time and costs involved in replacing and upgrading the vehicle's components and functionality. (emphasis added - column 13, line 46 to column 14, line 8)

The Examiner also asserts that Razavi explicitly discloses that these services being provided to a user as part of the easily-upgradeable vehicle component architecture include the well-known prior art “computerized maps" and "navigation aids":

> The designers may also incorporate into the vehicle the delivery of services that may assist the driver, thereby reducing the driver's workload and anxiety level. Such services may include providing computerized maps, navigation aids and emergency assistance signaling. (column 1, lines 41-46)

> In-car sub-network 20 can also communicate with external systems such as global positioning systems (GPS) and traffic information systems. A GPS receiver 30 is coupled to in-car sub-network 20 for providing automobile location information. GPS receiver 30 is capable of collecting information from GPS satellites to determine the position of the automobile. This information is converted to a format appropriate for other uses within the in-car sub-network, such as map retrieval for the area around the automobile. A Cue traffic information receiver 31 is also coupled to in-car sub-network 20. Receiver 31 obtains traffic information (e.g., information on traffic jams) which can be used, for example, by navigation systems running on in-car sub-network 20 to determine the best route for the automobile to take. Both GPS receiver 30 and traffic information receiver 31 are connected to compute platform 22 by RS-232 connectors. (column 6, line 58 to column 7, line 7).

> For example, the driver may simply recite the appropriate command for determining the location of the automobile, whereupon compute platform 22 might query GPS receiver 30 for location information, then retrieve a map from a web site and display the map to the driver. Compute platform 22 may also include a text-to-speech engine for use in delivering information to the driver. For example, the in-car sub-network may retrieve the driver's email or other documents, convert the text to speech and then "read" the document to the driver. (column 7, lines 54-63).

Therefore, the Examiner asserts that, given the cited sections above, one having ordinary skill in the art would clearly recognize that the invention of Razavi discloses a system that replaces the prior art services, including the emergency assistance signaling, with the easily-upgradeable, processor-controlled components.

Further, the Examiner asserts that the claims do not specify what constitutes the "emergency function." Therefore, while the Examiner does maintain that the invention of Razavi discloses a processing device adapted to perform operations including the operation of performing emergency assistance signaling, the Examiner also asserts that Razavi discloses a processing device adapted to perform other emergency functions including security functions and/or traffic avoidance functions:

> One embodiment of the invention comprises a vehicle which has a network installed therein. The network includes one or more devices which are addressable using IP addresses or object terminology. The devices may include various servers and clients, such as microphones, cameras, GPS receivers, interfaces to on-board diagnostic systems, communication devices, displays, CD players, radios, speakers, security devices and LANs (local are networks) to name only a few. Devices may easily be connected or disconnected to upgrade or reconfigure the vehicle's systems, and software and services can easily be provided to the various devices through the network. The network can enable the interaction of various network devices to increase the capabilities or utility of devices which may otherwise be limited. The system therefore provides an easy and inexpensive means to improve or otherwise modify the functionality of the vehicle. (column 2, lines 18-34)
>
> In-car sub-network 20 can also communicate with external systems such as global positioning systems (GPS) and traffic information systems. A GPS receiver 30 is coupled to in-car sub-network 20 for providing automobile location information. GPS receiver 30 is capable of collecting information from GPS satellites to determine the position of the automobile. This information is converted to a format appropriate for other uses within the in-car sub-network, such as map retrieval for the area around the automobile. A Cue traffic information receiver 31 is also coupled to in-car sub-network 20. Receiver 31 obtains traffic information (e.g., information on traffic jams) which can be used, for example, by navigation systems running on in-car sub-network 20 to determine the best route for the automobile to take. Both GPS receiver 30 and traffic information receiver 31 are connected to compute platform 22 by RS-232 connectors. (column 6, line 58 to column 7, line 7).

- Appellant argues:

> Independent of the above, claims 11 and 19, as well as their dependent claims, should be allowed because neither Razavi nor de Bellefuille disclose the feature of "a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: configuring the other components; maintaining the other components;..." The Examiner asserts that Razavi discloses a service element that maintains other components and de Bellefuille discloses that maintenance may include performing an error diagnosis. Specifically, the Examiner asserts that col. 6, lines 9-17 and col. 8, lines 50-67 of Razavi disclose a service element that maintains other components. The "Examiner asserts that Razavi discloses a service element that is the central component of the in-car sub-network that handles the processing and programming functions of the other components on the network." Final Office Action at page 26. First, this characterization of these sections of Razavi makes no mention of "maintaining," just as the sections themselves makes no mention of "maintaining." Additionally, even if "processing and programming" identically disclosed "maintaining," these sections of Razavi simply do not disclose "processing and programming." Col. 6, lines 9-17 merely states that all devices are either directly or indirectly plugged into the compute platform. This neither states nor implies that the compute platform "handles the processing and programming functions of the other components." Further, col. 8, lines 50-67 merely identifies JVM as the execution environment for the compute platform. This may disclose that any application running on the compute platform will run in Java, but does not disclose the compute platform processing, programming, or maintaining the connected devices.

The Examiner first asserts that in response to a Final Office Action mailed July 27, 2007, wherein claims were rejected as failing to comply with the enablement requirement “because the specification fails to provide adequate disclosure to one having ordinary skill as to the manner for performing upgrading and maintaining” due to the specification suggesting that “the updating of individual components with new software versions is a particular manner of carrying out maintenance tasks, thereby not supporting the separate operations of ‘upgrading the other components’ and ‘maintaining the other components’, Appellant argued in the response filed January 15, 2008:

> Claims 11, 12, 14 and 16-25 stand rejected under 35 U.S.C. §112, ¶1 as failing to comply with the enablement requirement. In particular, the Examiner believes that the operations of "upgrading" and "maintaining" should not be recited as separate steps. In particular, the Examiner believes that "upgrading of individual components with new software versions is a particular manner of carrying out maintenance tasks." Accordingly, Applicants have amended claims 11 and 19 to delete the separate reference to "upgrading." Claims 24 and 25 have been canceled, without prejudice (Applicant's arguments, January 15, 2008, page 4).

Therefore, while Appellant argues that the cited "sections of Razavi makes no mention of 'maintaining,'", the Examiner asserts that Appellant has already admitted that upgrading and maintaining are equivalent.

The Examiner then asserts that Razavi discloses a service element that belongs to a distributed system in a motor vehicle as a component (column 6, lines 10-18), the distributed system further including other components that are independent of one another (column 3, lines 30-33) and interconnected by a bus (column 4, lines 40-47), the service element comprising a processing device disposed in the motor vehicle (column 8, lines 21-49) and adapted to perform operations including the operations of configuring the other components (column 7, lines 40-46, column 8, lines 21-29, and column 11, lines 14-20), maintaining the other components (column 13, lines 53-61 and column 15, lines 6-13)…, by disclosing a computer platform "22" that configures the setting of other components, through a Java™ dashboard, and upgrades the data/software of other components, specifically:

This mechanism may also be used to personalize the operation of the automobile, adjusting seat positions, radio stations and the like according to the preferences of different drivers. The extent to which this mechanism controls the various functions of the automobile depends, of course, upon the coupling of the related automobile components to the in-car sub-network. (column 7, lines 40-46)

As indicated above, compute platform 22 is at the center of in-car sub-network 20. In one embodiment, compute platform 22 is a Java platform. (Java is a trademark of Sun Microsystems, Inc.) In other words, compute platform 22 uses the Java programming language to provide an environment in which Java applications can be executed. The use of a Java environment in compute platform 22 allows the software that will be executed on the compute platform to be hardware independent. (column 8, lines 21-29)

In other embodiments, similar software applications and monitors can be used to generate graphics for other equipment such as console displays, radio controls, air conditioning controls and the like. Other embodiments may also utilize independent processors and memories to generate graphics for the monitors rather than having the graphics generated by an application executing on the server. (column 11, lines 14-20)

Similarly, components which execute associated software, display data or provide services can be upgraded by downloading new software, data or services ("upgrade data") to the components through the in-car sub-network. This software may be quickly and easily retrieved from sources external to the in-car sub-network, such as web pages or LANs which can be accessed through the communication devices on the in-car sub-network. The software can be retrieved by one device (e.g., a wireless modem,) conveyed through the network and installed in a second device (e.g., a GPS locator) as easily as downloading a web page. (column 13, lines 53-61)

Once the connection is established, the in-car sub-network and LAN can function as a single network. The service station may be configured to request the service records of the vehicle so that any necessary service may be performed. If a software maintenance update is required by one of the components in the vehicle, a server on the LAN may automatically download this information to the appropriate component. (column 15, lines 6-13)

- Appellant argues:

Nowhere in these two sections or any other section of Razavi is "a processing device disposed in the motor vehicle and adapted to perform operations including

the operations of: configuring the other components; maintaining the other components;..." disclosed. For example, at Razavi, col. 2, lines 14 to 15, "re-configuring and upgrading of the vehicle" is disclosed. However, this discloses upgrading the overall vehicle by interchanging parts, and not upgrading (or otherwise maintaining) those parts. Razavi, at col. 3, lines 33-37, likewise discloses upgrading the vehicle by exchanging devices, and not upgrading (or otherwise maintaining) the devices. Razavi, at col. 5, lines 26-29, discloses that the system "allows new components or new software to be added to the automobile sub-network and thereby enables new services to be provided to the driver." However, this again does not disclose "a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: configuring the other components; maintaining the other components;..." "New components" again refers to the exchange of devices connected to the network, and "new software" may refer to any number of things, and does not disclose any particular device "maintaining" other components with "new software." For example, Razavi, at col. 10, lines 26-31, discloses that "server 53 allows the services which are provided to be upgraded or otherwise modified, whereas services provided by many embedded servers are 'hard wired' into them, thereby limiting their capabilities and their upgradeability." Here, as in the last cited section of Razavi, the "upgrading" is being performed on the central component, and not on the "other components."

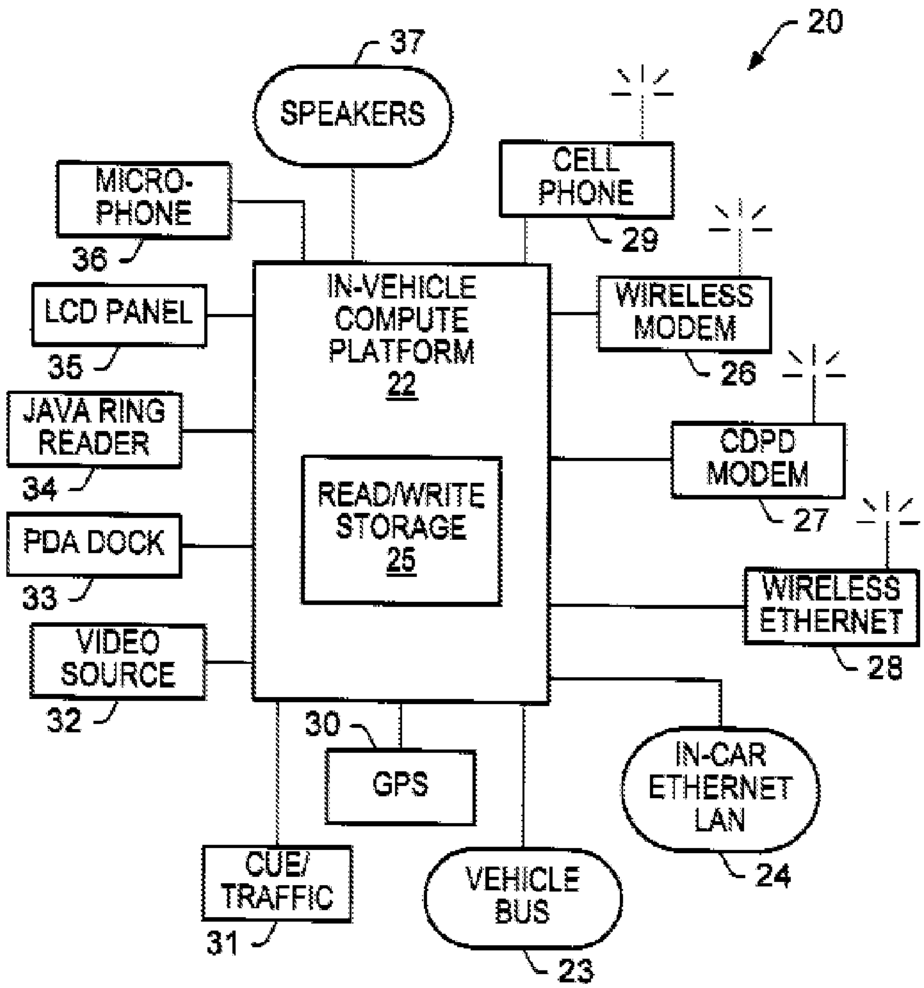
Of the many references in Razavi to upgrading, replacing, re-configuring, or otherwise performing a task (e.g., the four examples provided above); only one reference is made to "upgrading" an existing connected device (i.e., other than the central device). Razavi, at col. 13, lines 54-64, states that "components which execute associated software, display data or provide services can be upgraded by downloading new software, data or services ('upgrade data') to the components through the in-car sub-network... The software can be retrieved by one device (e.g., a wireless modem,) conveyed through the network and installed in a second device (e.g., a GPS locator)..." However, there is absolutely no mention of what device does the "install[ing] in a second device." The compute platform 22 (i.e., the alleged processing device of claims 11 and 19) is not mentioned anywhere in this section. Further, if it is argued that earlier disclosure indicates that the modem and GPS must both be connected to the compute platform, Razavi still fails to disclose the present features for at least two reasons. First, Razavi states that devices are connected to the compute platform directly or via a network (e.g., Ethernet). Therefore, the GPS may be directly connected to the modem, indirectly connected to the compute platform via a network, and perform this "upgrade" directly with the modem (i.e., with no involvement from the compute platform). Second, even if one assumes all devices are directly connected to the compute platform, Razavi only refer to that which is "conveyed through the network." Conveying data is the function of a switch or router, and does not constitute "maintaining" or "configuring" the device to which data is merely conveyed.

> As explained above, in great detail, though several sections of Razavi refers to upgrading, absolutely no section discloses "a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: configuring the other components; maintaining **the other components**;..."

While Appellant argues that “the software can be retrieved by one device (e.g., a wireless modem,) conveyed through the network and installed in a second device (e.g., a GPS locator)..." but “there is absolutely no mention of what device does the "install[ing] in a second device", the Examiner asserts that Razavi is explicit that it is the service element that is the central component “22” of the in-car sub-network and that handles the processing and programming functions of the other components on the network, specifically:

> Referring to FIG. 2, a more detailed block diagram of in-car sub-network 20 is shown. FIG. 2 illustrates some of the components that may be coupled to the network. In-car sub-network is built around an on-board compute platform 22. Compute platform 22 consists of a SparcStation UPN server (a prototype Sparc 5-based system.) All of the components of the in-car sub-network are either directly plugged into the compute platform or coupled to do it via an ethernet connection. (column 6, lines 9-17)

> As indicated above, compute platform 22 is at the center of in-car sub-network 20. In one embodiment, compute platform 22 is a Java platform. (Java is a trademark of Sun Microsystems, Inc.) In other words, compute platform 22 uses the Java programming language to provide an environment in which Java applications can be executed. The use of a Java environment in compute platform 22 allows the software that will be executed on the compute platform to be hardware independent. (column 8, lines 21-29)



The organization of the operating environment of compute platform 22 is shown in FIG. 3. At the lowest level of the diagram shown in FIG. 3 is hardware 41. Hardware 41 comprises the physical server (or other processor) on which the software is executed. Hardware 41 may comprise a SparcStation as in the above-described embodiment, or any other suitable computer, such as a StrongARM, PowerPC, Intel, MIPS or Mitsubishi system. Hardware 41 executes an operating system 42 which provides the basic functionality of the compute platform. The particular operating system selected to be used with hardware 41 will depend upon the type of processor upon which hardware 41 is built, and may also depend upon the network's requirements, if more than one operating system is available for the chosen hardware. A few of the operating systems which may be available are VxWorks, PSOS, OS9, Chorus and Linux. Operating system 42

supports Transport Control Protocol/Internet Protocol (TCP/IP) 43. Each of the devices connected to the in-car sub-network can therefore be addressable as a network device. (column 8, lines 30-49)

Compute platform 22 runs Java virtual machine 44. Java virtual machine 44 is a software application that executes in the environment of the native operating system and provides a common environment for applications written in the Java programming language. In other words, Java virtual machine 44 provides a layer of abstraction between an operating system and an executable program, essentially providing a Java-to-operating system interface so that programs written in the Java programming language can be executed on a platform running an operating system which would not otherwise support execution of the program. Because Java virtual machines exist for many different compute platforms, the same Java language program can be executed on each of these different platforms. In this manner, the hardware/operating system portion of the system is made a commodity. As a result, the remainder of the system is no longer tied to the original hardware, the original operating system, or the original supplier thereof (column 8, lines 50-67).

The Examiner also asserts that Razavi discloses that when maintenance/upgrading is being performed, the service element is used to perform such maintenance by receiving maintenance information from the communication devices that is then transmitted through the service element for updating the destination component, specifically:

As indicated above, the configuration of the vehicle components as network devices on an in-car sub-network simplifies installation and removal of the devices, hence re-configuration of the vehicle. This system thereby makes it possible to remove outdated components and replace them with new components, even though the new components may have different features or require different data or other signals from the vehicle or its components. Similarly, components which execute associated software, display data or provide services can be upgraded by downloading new software, data or services ("upgrade data") to the components through the in-car sub-network. This software may be quickly and easily retrieved from sources external to the in-

car sub-network, such as web pages or LANs which can be accessed through the communication devices on the in-car sub-network. The software can be retrieved by one device (e.g., a wireless modem,) conveyed through the network and installed in a second device (e.g., a GPS locator) as easily as downloading a web page. The system thereby provides a great deal of flexibility in the hardware and software configurations of the vehicle. In contrast, prior art systems for providing in-car services are tightly coupled to the car manufacturer's choice of hardware and operating system. Changes to the hardware require substantial time, labor and expense. Changes to the software require the original software supplier to provide modified code. The use of Personal Java in the in-car sub-network provides platform independence and also eliminates a substantial portion of the labor, time and costs involved in replacing and upgrading the vehicle's components and functionality. (column 13, line 46 to column 14, line 8).

In another scenario, a service station may have a wireless LAN so that a vehicle equipped with a network and wireless communication device can establish a connection with the LAN as the vehicle pulls into the station. Once the connection is established, the in-car sub-network and LAN can function as a single network. The service station may be configured to request the service records of the vehicle so that any necessary service may be performed. If a software maintenance update is required by one of the components in the vehicle, a server on the LAN may automatically download this information to the appropriate component. Alternately, the user of the vehicle may request information or services. For example, the user may request that music (e.g., in MP3 format) or videos (e.g., in MPEG-2 format) be downloaded for the passengers' entertainment. The user may also have information he or she wishes to have printed, in which case the information could be transmitted to a printer on the service station's LAN, where it could be picked up by the user. (column 15, lines 3-21)

The Examiner further asserts that Razavi discloses that when the “other” components are being configured, the service element is used to perform such configuration by configuration the other devices through a virtual dashboard:

This mechanism may also be used to personalize the operation of the automobile, adjusting seat positions, radio stations and the like according to the

> preferences of different drivers. The extent to which this mechanism controls the various functions of the automobile depends, of course, upon the coupling of the related automobile components to the in-car sub-network. (column 7, lines 40-46)
>
> As indicated above, compute platform 22 is at the center of in-car sub-network 20. In one embodiment, compute platform 22 is a Java platform. (Java is a trademark of Sun Microsystems, Inc.) In other words, compute platform 22 uses the Java programming language to provide an environment in which Java applications can be executed. The use of a Java environment in compute platform 22 allows the software that will be executed on the compute platform to be hardware independent. (column 8, lines 21-29)
>
> In other embodiments, similar software applications and monitors can be used to generate graphics for other equipment such as console displays, radio controls, air conditioning controls and the like. Other embodiments may also utilize independent processors and memories to generate graphics for the monitors rather than having the graphics generated by an application executing on the server. (column 11, lines 14-20)

- With respect to the rejection of claim 16, as may best be understood, under 35 U.S.C. 103(a) as being unpatentable over Razavi et al. in view de Bellefeuille and further in view of U.S. Patent No. 6,330,499 to Chou et al., Appellant argues:

> Claim 16 depends from allowable claim 11 and is therefore allowable for at least the same reasons as claim 11, since Chou does not correct the critical deficiencies of the combination of Razavi and de Bellefeuille noted above in support of the patentability of claim 11.

The Examiner maintains the rejection of claim 11 for the reasons provided above and, as such, Appellant's argument with respect to claim 16 is not considered to be persuasive.

- With respect to the rejection of claim 21, as may best be understood, under 35 U.S.C. 103(a) as being unpatentable over Razavi et al. in view de Bellefeuille and further in view of U.S. Patent No. 5,465,207 to Boatwright et al., Appellant argues:

> Claim 21 depends from allowable claim 11 and is therefore allowable for at least the same reasons as claim 11, since Boatwright does not cure the critical deficiencies of Razavi and de Bellefeuille noted above in support of the patentability of claim 11.

The Examiner maintains the rejection of claim 11 for the reasons provided above and, as such, Appellant's argument with respect to claim 21 is not considered to be persuasive.

- With respect to the rejection of claim 22, as may best be understood, under 35 U.S.C. 103(a) as being unpatentable over Razavi et al. in view de Bellefeuille and further in view of U.S. Patent No. 5,964,813 to Ishii et al., Appellant argues:

> Claim 22 depends from allowable claim 11 and is therefore allowable for at least the same reasons as claim 11, since Ishii does not cure the critical deficiencies of Razavi and de Bellefeuille noted above in support of the patentability of claim 11.

The Examiner maintains the rejection of claim 11 for the reasons provided above and, as such, Appellant's argument with respect to claim 22 is not considered to be persuasive.

- With respect to the rejection of claim 26, as may best be understood, under 35 U.S.C. 103(a) as being unpatentable over Razavi et al. in view de Bellefeuille and

Chou et al. and further in view of U.S. Patent No. 5,964,813 to Ishii et al., Appellant argues:

> Claim 26 includes subject matter analogous to that discussed above in support of the patentability of claim 11, so that claim 26 is a allowable for at least essentially the same reasons as claim 11, since, as noted above, Ishii does not correct the critical deficiencies of the combination of Razavi and de Bellefeuille noted above in support of the patentability of claim 11.

The Examiner asserts that, with respect to claim 11, Appellant argues that "[c]laims 11 and 19, as well as their dependent claims, should be allowed because neither Razavi nor de Bellefuille discloses the feature of 'performing an emergency function.'"

The Examiner also asserts that, with respect to claim 11, Appellant argues that "[i]ndependent of the above, claims 11 and 19, as well as their dependent claims, should be allowed because neither Razavi nor de Bellefuille disclose the feature of 'a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: configuring the other components; maintaining the other components;...'"

The Examiner asserts that claim 26 recites:

> A service element that belongs to a distributed system in a motor vehicle as a component, the distributed system further including other components that are independent of one another and interconnected by a bus, the service element comprising:
>
> a processing device disposed in the motor vehicle and adapted to perform operations including the operations of:
>
> > automatically, and at predefined intervals, performing an error diagnosis of software running on the other components;
> >
> > for each of a first subset of errors diagnosed in the error diagnosis step, repair the error; and

> for each of a second subset of errors diagnosed in the error diagnosing step, contact a provider and allow the provider to responsively remotely repair the error.

The Examiner asserts that claim 26 contains no limitation requiring "performing an emergency function" or "a processing device disposed in the motor vehicle and adapted to perform operations including the operations of: configuring the other components; maintaining the other components;..."

As such, the Examiner disagrees with Appellant's indication that "[c]laim 26 includes subject matter analogous to that discussed above in support of the patentability of claim 11" and, without any arguments that are specific to the actual limitations of claim 26, the Examiner asserts that Appellant's arguments are not considered to be persuasive. Therefore, the Examiner maintains the rejection of claim 26, as may best be understood, under 35 U.S.C. 103(a) as being unpatentable over Razavi et al. in view de Bellefeuille and Chou et al. and further in view of U.S. Patent No. 5,964,813 to Ishii et al.

- With respect to the rejection of claims 11, 12, 14, 16-21, and 23, as may best be understood, under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,185,491 to Gray et al. in view of U.S. Patent No. 6,246,935 to Buckley and further in view of U.S. Patent No. 6,330,499 to Chou et al., Appellant argues:

> The Examiner asserts that Gray discloses a service element that maintains other components and that Buckley discloses the precise error diagnosis of claims 11 and 19. However, nowhere does Gray disclose a service element that maintains other components as provided for in the present claims. For example, the Examiner refers to col. 4, line 65 to col. 5, line 21 of Gray as disclosing a

service element that performs upgrading and maintenance of other components on a distributed system to which the service element belongs. However, neither this section, nor any other section of Gray, discloses a service element that maintains other components. What Gray does disclose is a vehicle control center that is connected to one or more devices. In order for the vehicle control center to "control" a new device that is connected to the vehicle control center, the vehicle control center needs an "interface" for that device. "In the simplest implementation, illustrated [in FIG. 5], a memory device such as ROM 510 stores information about the device and in addition, in one embodiment, contains a plurality of JavaBeans 520 ***for <u>uploading</u> to the vehicle control center*** over bus 120." Gray at col. 4, lines 23-31 (emphasis added). At page 30 of the Final Office Action, "the Examiner asserts that Gray explicitly discloses upgrading/maintaining the interfaces of the other components by receiving software upgrades/updates via a port of the vehicle control center and, as such, the vehicle control center (i.e. service element) in Gray performs the operation of maintaining the other components, specifically [col. 4, line 65 to col. 5, line 21 states]:

> As an alternative to storing a control bean 750 and a GUI bean 760 or other beans associated with the standard device interface 740, the memory device or ROM may store a network address such as a uniform resource locator (URL) from which the appropriate manufacturer's interface may be downloaded. This permits the manufacturer to update a user interface on a dynamic basis and ensure that the most recent version of the manufacturer device interface is downloaded when a device is installed. This also reduces the ROM space required for storing the manufacturer's interface information and reduces the cost of the attached end device.
>
> One should note that there are a number of ways in which the standard device interfaces or custom **interfaces can be installed in the vehicle control center**. They can be pre- installed in the vehicle control center when it is installed in the vehicle. Additionally, they can be requested and downloaded from the attached devices as described more hereinafter. They can be loaded from a diskette, CDROM, EPROM or other memory medium into the vehicle control center. They can be received over a network link from a URL address which address is either downloaded from the attached device or entered manually, and they can be input over an I/O link, such as an infrared port to the vehicle control center."
>
> (Emphasis added.)

FIG. 5 of Gray refers to **uploading** the device interface stored in ROM 510 to the vehicle control center, and FIG. 7 contrasts that by referring to storing a URL for the interface location instead of the interface, so that the vehicle control center can upload the URL from the device and download the interface from the

location specified by the URL. This says nothing about downloading the interface to the device, and in fact, merely discloses the vehicle control center downloading the interface, to "be installed **in the vehicle control center**." Additionally, Gray states that the URL embodiment "**reduces** the ROM space required for storing the manufacture's interface information." In FIG. 5, the ROM is described as storing the interface (i.e., to upload to the vehicle control center), and, in FIG. 7, the ROM is described as storing a URL (i.e., indicating where the vehicle control center may retrieve the interface). Presumably, the URL is smaller in size than the interface and thus Gray states that FIG. 7 "**reduces** the ROM space required." However, if, as the Examiner contends, the URL is uploaded to the vehicle control center so that the vehicle control center can download the interface, only to further download the interface to the device (a step wholly absent from the disclosure), then the ROM would require **more** storage space than a ROM that only held the interface.

FIGS. 10A-D further support this, illustrating the vehicle control center with an A interface and a B interface, attached to device A and device B. Device C, which stores interface C, is connected to the bus, and responsive to a request, **uploads** interface C to the vehicle control center. This is again illustrated in FIGS. 11A, 11B, and 12. Nowhere in Gray does the vehicle control center, nor any other device, download to the "other components" a new interface. The only thing sent to the components is a request for an **upload**. See Gray, col. 4, line 65 to col. 5, line 21, as cited in the Final Office Action.

Thus, the system of Gray in view of Buckley, and in view of Chou, does not disclose or suggest these features of either of claims 11 and 19.

The Examiner maintains that Gray discloses a service element that belongs to a distributed system in a motor vehicle as a component, the distributed system further including other components that are independent of one another and interconnected by a bus, the service element comprising a processing device disposed in the motor vehicle and adapted to perform operations including the operation upgrading the other components:

As an alternative to storing a control bean 750 and a GUI bean 760 or other beans associated with the standard device interface 740, the memory device or ROM may store a network address such as a uniform resource locator (URL) from which the appropriate manufacturer's interface may be downloaded. This permits the manufacturer to update a user interface on a dynamic basis and

> ensure that the most recent version of the manufacturer device interface is downloaded when a device is installed. This also reduces the ROM space required for storing the manufacturer's interface information and reduces the cost of the attached end device. (column 4, line 65 to column 5, line 8)

The Examiner maintains that such a disclosure of upgrading the interfaces of each device through the service element meets the limitation for "maintaining the other components".

Additionally, while Appellant argues “[n]owhere in Gray does the vehicle control center, nor any other device, download to the ‘other components’ a new interface”, the Examiner asserts that claim 11 (and 19) does not contain any limitation that requires downloading anything to the other components. Specifically, with respect to the limitation in question, claim 11 (and 19) requires, "a processing device disposed in the motor vehicle and adapted to perform operations including the operations of… maintaining the other components”. The Examiner asserts that one having ordinary skill in the art would clearly recognize that providing a processing device that updates new interfaces for the other components that allow the other components to maintain interaction, communication, and control by/with the processor (i.e. “a control bean for the execution of functionality to be performed in the vehicle control center to control the device with which the control bean is associated as well as a GUI bean which implements a graphical user interface by which the control functionality of the control bean may be exercised”) meets the limitation of "a processing device disposed in the motor vehicle and adapted to perform operations including the operations of… maintaining the other components”:

FIG. 2 is a block diagram of an exemplary vehicle network in accordance with the invention. The vehicle control center 110, as noted in conjunction with FIG. 1, controls bus 120. A plurality of devices 200, 210, 220, 230, 240 and 250 are illustrated as exemplary attached devices that might commonly be found in a network vehicle. Device 200 shows a cabin lighting interface by which the vehicle control center can be used to control the lights in the cabin of a vehicle. (column 3, lines 33-41)

FIGS. 6A and 6B show an exemplary alternative device attached to a vehicle network and a corresponding software architecture for the alternative device, respectively, in accordance with the invention. A more sophisticated attached device 600 contains its own CPU or controller and memory 620 connected to the bus 120. In this particular implementation, embedded Java 630 can be run using CPU 610. A standard application programming interface (API) for automotive applications can be defined to standardize the programming interfaces to automotive devices. One or more Java™. objects conforming to the API, hereinafter called standard device interfaces 640 are stored as JavaBeans™ in the memory space of the attached device. (column 4, lines 29-41)

FIG. 7 illustrates a preferred way in which information can be stored in ROM (FIG. 5) or stored in memory (FIG. 6) in accordance with the invention. Typically, a device ID 700 will be stored. The device ID may contain information such as an identification of the manufacturer 710, a model number 720, a serial number of the device 730 and other information. In one embodiment, one or more standard device interfaces 740, such as standard device interface 1 or standard device interface N may be stored. In a preferred embodiment, each standard device interface includes a control bean for the execution of functionality to be performed in the vehicle control center to control the device with which the control bean is associated as well as a GUI bean which implements a graphical user interface by which the control functionality of the control bean may be exercised. (column 4, lines 50-64)

- Appellant argues:

Each of claims 11 and 19 also recites, inter alia, "allowing a remote diagnosis of the other components of the distributed system to be carried out, **wherein the remote diagnosis includes testing** at least one of **the other components**."

As regards this feature, neither Gray nor Buckley discloses "the remote diagnosis includes testing at least one of the other components." Instead, the Examiner relies on Chou at col. 3, lines 15-31 and col. 5, lines 34-35. However, the remote service center 200 (including diagnostic server 201) is thoroughly discussed at Chou col. 5, line 33 to col. 6, line 47, and does not mention "wherein the remote diagnosis includes testing at least one of the other components."

> "Diagnostic server 201 [may have] access to data related to the vehicle such as history, as-built, diagnostics, warranty, service information and failure mode data." (Chou, col. 5, lines 35-37.) The section goes on to further describe data collection and modeling, but nowhere does Chou disclose a "remote diagnosis [that] includes **testing** at least one of the **other** components."

The Examiner asserts that, as explained above with respect to the outstanding 35 U.S.C. 112, first paragraph, rejection, the limitation of “allowing a remote diagnosis of the other components of the distributed system to be carried out, wherein the remote diagnosis includes testing at least one of the other components” is rejected as lacking enablement due to the specification not clearly supporting and/or distinguishing each of "performing an error diagnosis", "allowing remote diagnosis" and "testing at least one of the other components".

The Examiner also asserts that, in the Appeal Brief on page 6, Appellant indicates that “diagnosis/testing is known in the art”, “a diagnosis/testing itself for any particular implementation would be understood by one of ordinary skill in the art”, “it is understood from the plain meaning of the terms that testing is a subset of carrying out remote diagnosis”, “To perform a diagnosis means to identify the nature or cause of a phenomenon.”, “A step in performing such identification may include performing a test”, and “The actual diagnosis routines and test routines are well known in the art, and selected based on context of specific implementation” but now Appellant argues the merits of “testing” and indicates that while Chou discloses a "diagnostic server", Chou does not specifically teach that such diagnosis includes testing.

Additionally, the Examiner also asserts that with respect to the limitations in question in the rejection of claims 11 and 19, as may best be understood, under 35

U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,185,491 to Gray et al. in view of U.S. Patent No. 6,246,935 to Buckley and further in view of U.S. Patent No. 6,330,499 to Chou et al., the rejection relies on the invention of Gray and Buckley to teach a communication element for loading new software interfaces for the plurality of other components, and the invention of Chou is only relied upon for teaching allowing a remote diagnosis of the plurality of components of the distributed system, wherein the remote diagnosis includes testing.

The Examiner than maintains that Chou does teach an arrangement for allowing a remote testing and diagnosis of the plurality of components of the system, by providing remote diagnosis of a plurality of components connected to a service element “120” on a vehicle bus "104” wherein a diagnosis server diagnoses/tests the plurality of components by obtaining data regarding the plurality of components through the service element, specifically:

> The processor is integrated with a network interface 320 to provide communication capability with the remote service center 200. Preferably, the network interface comprises a removable wireless telephone such as the Motorola i1000+ and a docking facility for the wireless phone integrated with the client computer device. Both voice and data connections can be supported by interfacing the processor 300 and the wireless phone. The telephone integration provides basic communication functions. It establishes a data (e.g. TCP/IP) connection with a remote service center (e.g., remote service center 200). Wireless technologies such as GSM (Global System for Mobile Communications), CDMA (Code Division Multiple Access), TDMA (Time Division Multiple Access), iDEN.TM. (a TDMA-based Motorola technology), and AMPS (Advanced Mobile Phone System) can all be supported. The phone may also be used for wireless voice communications. (column 3, lines 15-13)

> The vehicle bus interface 120 is responsible for replying to requests for parametric data. It is also responsible for continuously monitoring the vehicle

bus 104 for any fault reported by the ECUs 103, in terms of diagnostic trouble codes (DTCs). (column 4, lines 15-20)

The in-vehicle system establishes a data connection, using a cellular phone 102, with a diagnostic server 201 at the service center 200, collects diagnostic data using the diagnostic data service 120A, and uploads a snapshot of the vehicle data (e.g. VIN, test data with time-stamp) to the diagnostic server 201. The in-vehicle system may need to interact with the server 201 throughout a diagnosis or health checkup session, collecting and providing additional vehicle information as requested by the server 201. The result from the server 201 indicates either that the vehicle is in good health with no urgent action required, or that one or more problems requiring immediate attention are detected.

When the vehicle is deemed to be in good health, a report enumerating the items checked and the conditions of those items is provided to the client computer device and reported to the driver or user using TTS and the display. (column 5, lines 1-15)

In step 7, the diagnostic server requests additional information (e.g. vehicle parametric data) from the diagnostic client 421. Then, in step 8, the diagnostic client requests the data from the diagnostic data service 120A.

In step 9, the diagnostic data service interrogates the ECUs 103 via the vehicle bus adapter 120C for the requested data.

Then, in step 10, the ECUs 103 provides the requested data. In step 11, the data is returned to the diagnostic client 421, and thereafter, in step 12, the data is in turn transmitted to the diagnostic server 201. Steps 7 through 12 may be repeated to obtain all of the relevant vehicle data. (column 8, lines 22-33)

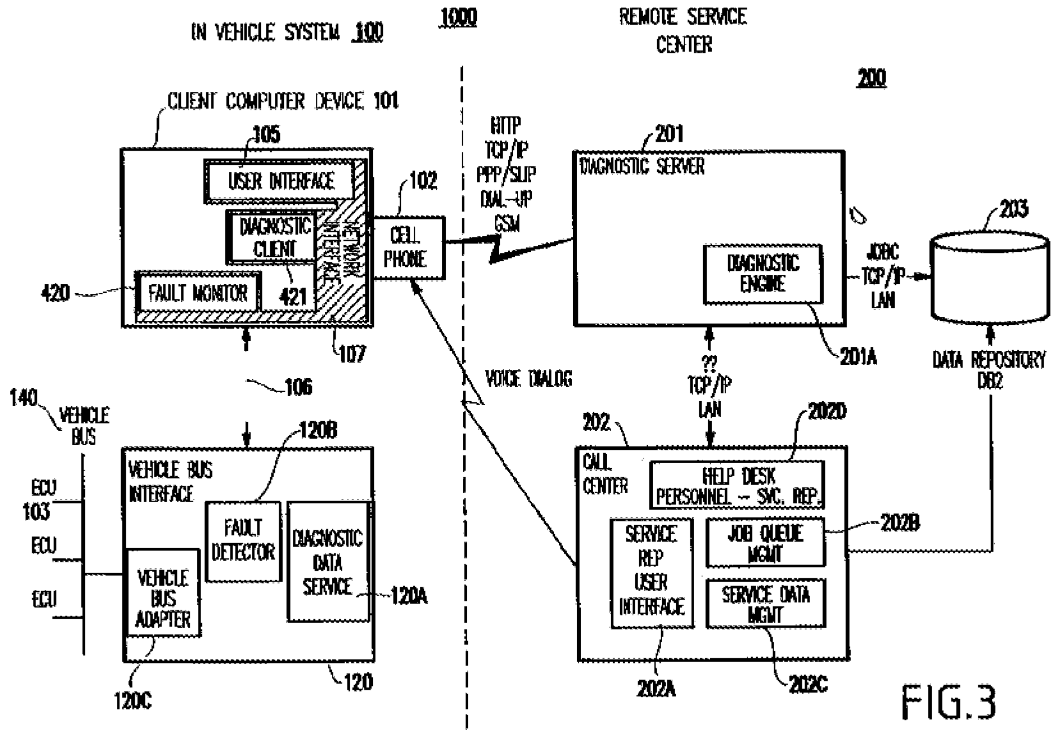


FIG.3

- Appellant provides no arguments with respect to the rejection of claims 22 and 26, as may best be understood, under 35 U.S.C. 103(a) as being unpatentable over Gray in view of Buckley and Chou and further in view of U.S. Patent No. 4,866,713 to Worger et al. and, as such, the Examiner maintains the outstanding rejection.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Jeffrey R. West/

Primary Examiner, Art Unit 2857

Conferees:

Eliseo Ramos-Feliciano

/Eliseo Ramos-Feliciano/
Supervisory Patent Examiner, Art Unit 2857

Jose G. Dees

/Jose' G. Dees/
T-QAS TC 2800